## *Olfaction: Chemical Communication*
## *Part IV*

Names: _____ Sec._____

Your group is to analyze the functions, compare them with the smell categories and report whether or not there is a correlation between any type of the smell categories and a particular function.

1. Using your completed table, identify any correlations between a chemical function and a smell among your samples.

2. Consult: *http://ep.llnl.gov/msds/Chem106/Smell/Smell-Stereochem.html*

a) Define: *Stereoisomer*

b) Check out a molecular model kit from the stockroom. Make a model that looks like compound O-6 and another that looks like O-11. Check with Dr. R. that your models are correct.

How many carbon atoms in the respective models have four different things attached?

Are the arrangments of the four attachments exactly the same in each model?

Using your models, compare them to the Web models and identify the molecule (left or right on the computer screen ) that smells like caraway.

3. Consult *http://ep.llnl.gov/msds/orgchem/Chem226/ChemComm.html*

a) Read "Love Molecules". Draw Kekulé, condensed and line structures of the pheromone that is found in the urine of the female of this species and identify any function(s) in the molecule by name.

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| Kekulé, |
| Condensed |
| Line |

b) Define: *Pheromone*

c) Name three other types of pheromones in addition to sex pheromones.

4. Consult *http://ep.llnl.gov/msds/orgchem/Chem226/ChemComm.html*
The compound imaged in the Title Box of the Web page is cantharidin. Consult the *Merck Index* which can be checked out of the stockroom. From the information presented can you possibly tell how toxic is this compound to a 100 lb human? If so, how? What uses are listed in the *Merck Index* for the compound? (In the past, reportedly it was put in coed's drinks at college parties on occasion.)

5. Consult: *http://ep.llnl.gov/msds/orgchem/Chem226/smell-links.html*
Provide two scientific reasons why someone should invest in Pherin Pharmaceuticals or the Erox Corporation, and two why they should not. What would you do?

6. Consult *http://ep.llnl.gov/msds/orgchem/Chem226/ChemComm.html*
Refer to the four molecular models that are electronic images on the Web page. They can be viewed with Chime: #one, trail pheromone of *Myrmica rubra*, a common Northern European ant, #two, honey bee queen pheromone, #three, sea anemone alarm pheromone and #four, water mold sex attractant. Draw Kekulé, condensed and line structures and circle all the chiral carbon atoms for the four molecules and refer to the physcial models in the lab for #s 5-8. You can physically handle models five, six, seven and eight but do not change the atoms or break bonds. Circle all chiral atoms in each of the eight molecules in your line drawings only. After completing the structures provide a molecular formula for each and name the function(s) present in each compound.

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Name _____ Section_____

Chem 226/ Fall 2004

***Chemical Communication***

| # | Kekulé | Condensed | Line |
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| # | Molecular Formula | Function(s) |
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*Bonus question:* 1. Identify who was Kekulé; 2. What he is famous for; and 3. Why revisionist historians question his veracity.